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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,424	11/29/2004	Tatsuya Kato	890050.513USPC	4961

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EXAMINER

NGUYEN, LINH THI

ART UNIT	PAPER NUMBER
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2627

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/516,424	Applicant(s) KATO ET AL.	
	Examiner Linh T. Nguyen	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5-7, 9-13 and 17-22 is/are rejected.
- 7) ☒ Claim(s) 2-4, 8 and 14-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 6, 12, 13, and 17-19 are rejected under 35 U.S.C. 102(b) as being unpatentable by Hideya (JP Publication 10106008).

In regards to claims 1, 13 and 19, Hideya discloses a method, apparatus and medium for recording data in an optical recording medium (Fig. 1) wherein data are recorded in a write-once type optical recording medium including at least one recording layer disposed on a substrate (it is inherent and well known in the art that the optical disk includes a recording layer on a substrate) by projecting a laser beam whose power is modulated in accordance with a pulse train pattern including at least pulses whose levels are set to levels corresponding to a recording power (Fig. 6, shows a pulse corresponding to a recording power P_w) and a bottom power onto the at least one recording layer and forming a recording mark in a predetermined region of the at least one recording layer (Fig. 8, shows writing power P_{wo} , erasing power P_{eo} , and bias power P_{bo}), the method for recording data in an optical recording medium comprising a step of employing a pulse train pattern (Fig. 9) having the smaller number of pulses whose level is set to a level corresponding to a recording power as a linear recording

velocity becomes higher (Fig. 9a. shows more pulses when the velocity is at high speed and 9b' shows less number of pulses at lower velocity) and modulating the power of a laser beam thereby to form a recording mark in the predetermined region of the at least one recording layer (Paragraph [0013], lines 5-11).

In regards to claims 5 and 17, Hideya discloses the method and apparatus for recording data in an optical recording medium in accordance with claim 1 wherein in the case where data are to be recorded by forming recording marks having respective lengths at a linear recording velocity, the number of pulses is set so that a difference between itself and the number representing a length of a recording mark is constant (Paragraph [0044]).

In regards to claims 6 and 18, Hideya discloses the method and apparatus for recording data in an optical recording medium in accordance with claim 1 wherein the first linear recording velocity is determined to be equal to or higher than 10 m/sec (Fig. 5).

In regards to claim 12, Hideya discloses a method for recording data in an optical recording medium (Fig. 1) wherein data are recorded in a write-once type optical recording medium including at least one recording layer disposed on a substrate (It is well known in the art that the optical disk includes a recording layer on a substrate.) by projecting a laser beam whose power is modulated in accordance with a pulse train

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pattern including at least pulses whose levels are set to levels corresponding to a recording power (Fig. 6, shows a pulse corresponding to a recording power P_w) and a bottom power onto the at least one recording layer and forming a recording mark in a predetermined region of the at least one recording layer (Fig. 8, shows writing power P_{wo} , erasing power P_{eo} , and bias power P_{bo}), the method for recording data in an optical recording medium comprising a step of employing a pulse train pattern having a smaller number of pulses whose level is set to a level corresponding to a recording power (Fig. 9a. shows more pulses when the velocity is at high speed and 9b'. shows less number of pulses at lower velocity) as a ratio of a track pitch TP of the optical recording medium to a diameter of a spot of the laser beam becomes smaller (Paragraph [0009]) and modulating the power of a laser beam thereby to form a recording mark in the predetermined region of the at least one recording layer (Paragraph [0013], lines 5-11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 10, 11 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hideya in view of Mizushima et al (US Publication 2004/0174796).

In regards to claim 9, Hideya discloses everything claimed as applied above (see claim 1). However, Hideya does not disclose a laser beam having a wavelength equal to or shorter than 450 nm.

In the same field of endeavor, Mizushima et al discloses a laser beam having a wavelength equal to or shorter than 450nm (Paragraph [0009], line 16). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the method of recording data in an optical recording medium of Hideya to have a laser beam wavelength of 450nm as taught by Mizushima et al. The motivation for doing so would have been to record at a high-speed using a blue wavelength laser light on any optical recording medium.

In regards to claim 10, Hideya does not but Mizushima et al discloses the method for recording data in an optical recording medium, wherein data are recorded in the optical recording medium by employing an objective lens and a laser beam whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam onto the optical recording medium via the objective lens (Paragraph [0009], lines 17-19; wavelength of $450/0.8 = 562$ nm, which is less than 640nm). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the method of recording data in an optical recording medium of Hideya to have a laser beam with a numerical aperture and wavelength of less than 640nm as taught by Mizushima et al. The motivation is the same as claim 9 above.

In regards of claims 11 and 20, Hideya does not but Mizushima et al discloses the method and medium for recording data in an optical recording medium, wherein the optical recording medium further comprises a light transmission layer (Fig. 1, element 22), and a first recording layer (Fig. 1, element 18A) and a second recording layer (Fig. 1, element 18B) formed between the substrate (Fig. 1, element 12) and the light transmission layer (Fig. 1), and is constituted so that the at least two recording marks are formed by projecting the laser beam thereunto, thereby mixing an element contained in the first recording layer as a primary component and an element contained in the second recording layer as a primary component (Paragraph [0026]). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the method of Hideya to contain a transmission, substrate and 2 recording layers as suggested by Mizushima et al. The motivation for doing so would have been to offer a storage medium that is reliable under high-speed type recording.

In regards to claim 21, Hideya does not but Mizushima et al discloses the write-once type optical recording medium, wherein the second recording layer is formed so as to be in contact with the first recording layer (Fig. 1, elements 18A-B). The motivation is the same as claim 20 above.

In regards to claim 22, Hideya does not but Mizushima et al discloses the write-once type optical recording medium, wherein the light transmission layer is formed so

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as to have a thickness of 10 nm to 300 nm (Paragraph [0011]). The motivation is same as claim 20 above.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hideya in view of Sunagawa (US Patent number 6442119).

In regards to claim 7, Hideya discloses everything claimed as applied above (see claim 1). However, Hideya does not disclose a recording data in an optical recording medium, wherein the bottom power is set to a higher level as the linear recording velocity becomes higher.

In the same field of endeavor, Sunagawa discloses the bottom power is set to a higher level as the linear recording velocity becomes higher (Column 3, lines 60-67). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the method of recording data in an optical recording medium of Hideya to set the bottom power higher as velocity increase as suggested by Sunagawa. The motivation for doing so would have been to record at a high-speed with using high power laser beam.

Allowable Subject Matter

Claims 2-4, 8, and 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regards to claims 2 and 14, the prior arts made of record neither discloses nor suggests the combination of limitations as set forth in independent claims 1 and 13, respectively, and further including the limitation, **wherein the number of pulses is set to 1 in the case where data are to be recorded at a linear recording velocity equal to or higher than a first linear recording velocity V_H .**

In regards to claims 3 and 15, the prior arts made of record neither discloses nor suggests the combination of limitations as set forth in independent claims 1 and 13, respectively, and further including the limitation, **wherein in the case where data are to be recorded at a linear recording velocity V_M lower than the first linear recording velocity V_H and higher than a second linear recording velocity V_L , the number of pulses is set to 1 at least when the shortest recording mark is to be formed and the number of pulses is set larger as the length of a recording mark to be formed becomes longer.**

In regards to claims 4 and 16, the prior arts made of record neither discloses nor suggests the combination of limitations as set forth in independent claims 1 and 13, respectively, and further including the limitation, **wherein in the case where data are to be recorded at a linear recording velocity lower than the first linear recording velocity V_H and higher than a second linear recording velocity V_L , the number of pulses is set to 1 at least when the shortest recording mark is to be formed and the number of pulses is set larger as the linear recording velocity V_M becomes**

lower.

In regards to claim 8, the prior arts made of record neither discloses nor suggests the combination of limitations as set forth in independent claims 1 and 13, respectively, and further including the limitation, **wherein a ratio of the bottom power to the recording power is set higher as the linear recording velocity becomes higher.**

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamada et al, Ito et al, and Nakamura are cited to show other closely related to the changes in velocity corresponds to the changes in the width of pulses.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linh T. Nguyen whose telephone number is 571-272-5513. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LN
September 1, 2006


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